

Mr. Gerald Barnes.
Madison State Hospital
711 Green Road
Madison, Indiana 47250

Re: SSM077-12914-00008
First Significant Source Modification to
Part 70 No.: T077-6406-00008

Dear Mr. Barnes:

Madison State Hospital was issued a Part 70 permit (T077-12914-00008) on December 16, 1998. A letter requesting changes to this permit was received on October 31, 2000. Pursuant to the provisions of 326 IAC 2-7-12 a Significant Source Modification to this permit is hereby approved as described in the attached Technical Support Document.

The application includes information relating to the prior approval for the removal of two existing coal fired boilers and the construction and operation of two (2) natural gas fired boilers, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (mmBtu) per hour of natural gas or 46.37 mmBtu/hr of No. 2 fuel oil, pursuant to 326 IAC 2-7-5(16).

The following construction conditions are applicable to the proposed project:

1. General Construction Conditions
The data and information supplied with the application shall be considered part of this source modification approval. Prior to any proposed change in construction which may affect the potential to emit (PTE) of the proposed project, the change must be approved by the Office of Air Quality (OAQ).
2. This approval to construct does not relieve the permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.
3. Effective Date of the Permit
Pursuant to IC 13-15-5-3, this approval becomes effective upon its issuance.
4. Pursuant to 326 IAC 2-1.1-9 (Revocation), the Commissioner may revoke this approval if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

5. All requirements and conditions of this construction approval shall remain in effect unless modified in a manner consistent with procedures established pursuant to 326 IAC 2.
6. Prior to start of operation, the following requirements should be met:
 - (a) The attached affidavit of construction shall be submitted to the Office of Air Quality (OAQ), Permit Administration & Development Section, verifying that the facilities were constructed as proposed in the application. The facilities covered in the Significant Permit Revision may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM.
 - (b) If construction is completed in phases; i.e., the entire construction is not done continuously, a separate affidavit must be submitted for each phase of construction. Any permit conditions associated with operation start up dates such as stack testing for New Source Performance Standards (NSPS) shall be applicable to each individual phase.
 - (c) Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section and attach it to this document.

All other conditions of the permit shall remain unchanged and in effect. Please attach a copy of this modification and the following revised permit pages to the front of the original permit.

Pursuant to the New Source Performance Standard, 326 IAC 12, (40 CFR 60.40c, Subpart Dc—Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units) the source owner/operator is hereby advised of the requirement to report the following at the appropriate times:

- (a) Commencement of construction date (no later than 30 days after such date);
- (b) Anticipated start-up date (not more than 60 days or less than 30 days prior to such date);
- (c) Actual start-up date (within 15 days after such date); and
- (d) Date of performance testing (at least 30 days prior to such date), when required by a condition elsewhere in this permit.

Reports are to be sent to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue, P. O. Box 6015
Indianapolis, IN 46206-6015

The application and enforcement of these standards have been delegated to the IDEM-OAQ. The requirements of 40 CFR Part 60 are also federally enforceable.

This decision is subject to the Indiana Administrative Orders and Procedures Act - IC 4-21.5-3-5. If you have any questions on this matter, please contact Phillip Ritz, c/o OAQ, 100 North Senate Avenue, P.O. Box 6015, Indianapolis, Indiana, 46206-6015, or call (800) 451-6027, press 0 and ask for extension (3-6878), or dial (973) 575-2555, extension 3241.

Sincerely,

Paul Dubenetzky, Chief
Permits Branch
Office of Air Quality

Attachments
PR/EVP

cc: File - Jefferson County
U.S. EPA, Region V
Jefferson County Health Department
Air Compliance Section Inspector - D.J. Knotts
Compliance Data Section - Karen Nowak
Administrative and Development - Janet Mobley
Technical Support and Modeling - Michelle Boner

PART 70 OPERATING PERMIT

Office of Air Quality

**Madison State Hospital
711 Green Road
Madison Indiana 47250**

(herein known as the Permittee) is hereby authorized to operate subject to the conditions contained herein, the source described in Section A (Source Summary) of this permit.

This permit is issued in accordance with 326 IAC 2 and 40 CFR Part 70 Appendix A and contains the conditions and provisions specified in 326 IAC 2-7 as required by 42 U.S.C. 7401, et. seq. (Clean Air Act as amended by the 1990 Clean Air Act Amendments), 40 CFR Part 70.6, IC 13-15 and IC 13-17.

Operation Permit No.:T077-6406-00008	
Issued by: Janet G. McCabe, Assistant Commissioner Office of Air Quality	Issuance Date: December 16, 1998 Expiration Date:
First Significant Source Modification: 077-12914	Pages Affected: 2, 25, 26, 27, 28 and 33a
Issued by: Paul Dubenetzky, Branch Chief Office of Air Quality	Issuance Date:

SECTION A

SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ). The information describing the source contained in conditions A.1 through A.3 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)] [326 IAC 2-7-1(22)]

The Permittee owns and operates a Psychiatric care facility.

Responsible Official: Madison State Hospital
Source Address: 711 Green Road, Madison, Indiana 47250
Mailing Address: 711 Green Road, Madison, Indiana 47250
SIC Code: 8063
County Location: Jefferson County
County Status: Attainment for all criteria pollutants
Source Status: Part 70 Permit Program
Minor Source, under PSD;
Major Source, Section 112 of the Clean Air Act

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c)(3)] [326 IAC 2-7-5(15)]

This stationary source consists of the following emission units and pollution control devices:

- (a) Two (2) natural gas fired boilers, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (MMBtu) per hour of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, identified as B-2 and B-3, each exhausting at one (1) stack, identified as S-2 and S-3, respectively, and
- (b) One (1) thirty-one (31) mmBtu per hour natural gas/#2 fuel oil fired boiler, identified as EU-4, exhausting to stack S

A.3 Specifically Regulated Insignificant Activities [326 IAC 2-7-1(21)] [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]

This stationary source does not currently have any insignificant activities, as defined in 326 IAC 2-7-1 (21) that have applicable requirements.

A.4 Part 70 Permit Applicability [326 IAC 2-7-2]

This stationary source is required to have a Part 70 permit by 326 IAC 2-7-2 (Applicability) because:

- (a) It is a major source, as defined in 326 IAC 2-7-1(22);
- (b) It is a source in a source category designated by the United States Environmental Protection Agency (U.S. EPA) under 40 CFR 70.3 (Part 70 - Applicability).

SECTION D.1 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]:

- (a) Two (2) natural gas fired boilers, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (MMBtu) per hour of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, identified as B-2 and B-3, each exhausting at one (1) stack, identified as S-2 and S-3, respectively, and
- (b) one (1) thirty-one (31) mmBtu per hour natural gas/#2 fuel oil fired boiler, identified as EU-4, exhausting to stack S-2.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.1.1 PSD Minor Limit [326 IAC 2-2] [40 CFR 52.21]

The input of No. 2 Fuel Oil to the two (2) natural gas fired boilers, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (MMBtu) per hour of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, identified as B-2 and B-3 shall be less than 4,553,333 gallons per year. This usage limit is required to limit the potential to emit of NO_x to less than 54.64 tons per twelve (12) month consecutive period (15.64 tons per year contemporaneous decrease + 39 tons per year limited emissions) for NO_x emissions. Compliance with this limit makes 326 IAC 2-2 (Prevention of Significant Deterioration) and 40 CFR 52.21 not applicable.

D.1.2 Sulfur dioxide (SO₂) [326 IAC 7-1.1-2] [326 IAC 12-1]

Pursuant to 326 IAC 7-1.1-2 (SO₂ Emissions Limitations) and 40 CFR 60, Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units):

- (a) the SO₂ emissions from the one (1) thirty one (31) mmBtu per hour natural gas and #2 fuel oil fired boiler, and the two (2) natural gas fired boilers, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (MMBtu) per hour of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, identified as B-2 and B-3, shall not exceed five tenths (0.5) pounds per mmBtu for when combusting #2 fuel oil only.
- (b) The sulfur content of the fuel oil shall not exceed five-tenths percent (0.5%) by weight. [40 CFR 60.42c(d)]

Pursuant to 40 CFR 60 Subpart Dc, the fuel oil sulfur content limit applies at all times, including periods of startup, shutdown, and malfunction.

D.1.3 Particulate matter (PM) [326 IAC 6-2-3(d)]

- (a) Pursuant to OP-39-01-94-0076, OP39-01-94-0077, issued on June 7, 1990, and 326 IAC 6-23(d) (Particulate emissions limitations), the Particulate Matter emissions from the one (1) thirty one (31) mmBtu per hour natural gas and #2 fuel oil boiler, shall be limited to eight tenths (0.8) pounds per million Btu.
- (b) Pursuant to 326 IAC 6-2-3 (Particulate Matter Emission Limitations for Sources of Indirect Heating, the PM emissions from each of the two (2) natural gas fired boilers, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (MMBtu) per hour of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, identified as B-2 and B-3 shall be limited to 0.26 pounds per MMBtu heat input.

This limitation is based on the following equation:

$$Pt = \frac{C \times a \times h}{76.5 \times Q^{0.75} \times N^{0.25}}$$

where

$C = 50 \text{ u/m}^3$

Pt = emission rate limit (lbs/MMBtu)

Q = total source heat input capacity (MMBtu/hr) = $48.5 + 48.5 + 66.0 + 66.0 + 31.0 = 260.0 \text{ MMBtu/hr}$

N = number of stacks

a = plume rise factor (0.67)

h = stack height (ft)

D.1.4 Emission Unit Removal

The following equipment at the source will be decommissioned and removed once the two (2) natural gas fired boilers, using No. 2 fuel oil as backup, identified as B-2 and B-3 are constructed and fully operational:

- (1) Two (2) sixty-six (66) mmBtu per hour coal fired boilers, identified as EU-2 and 3, exhausting to stack S-1 with one (1) cyclone for particulate control.

D.1.5 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for this facility and its control device

Compliance Determination Requirements

D.1.6 Sulfur Dioxide Emissions and Sulfur Content

Pursuant to 40 CFR 60, Subpart Dc, the Permittee shall demonstrate compliance utilizing one of the following options.

- (a) Pursuant to 326 IAC 3-7-4, the Permittee shall demonstrate that the sulfur dioxide emissions do not exceed five-tenths (0.5) pound per million Btu heat input by weight by:
 - (1) Providing vendor analysis of fuel delivered, if accompanied by a vendor certification, or;
 - (2) Analyzing the oil sample to determine the sulfur content of the oil via the procedures in 40 CFR 60, Appendix A, Method 19.
 - (A) Oil samples may be collected from the fuel tank immediately after the fuel tank is filled and before any oil is combusted; and
 - (B) If a partially empty fuel tank is refilled, a new sample and analysis would be required upon filling; or
- (b) Compliance may also be determined by conducting a stack test for sulfur dioxide emissions from the thirty-one (31) MMBtu per hour boiler and the two (2) natural gas fired boilers, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (MMBtu) per hour of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, identified as B-2 and B-3, using 40 CFR 60, Appendix A, Method 6 in accordance with the procedures in 326 IAC 3-6.

A determination of noncompliance pursuant to any of the methods specified in (a) or (b) above shall not be refuted by evidence of compliance pursuant to the other method.

D.1.7 NOx Emissions

Compliance with Condition D.1.1 shall be demonstrated within 30 days of the end of each month based on the total No. 2 fuel oil usage for the twelve (12) month period.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

D.1.8 Visible Emissions Notations

- (a) Visible emission notations of the two (2) natural gas fired boilers, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (MMBtu) per hour of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, identified as B-2 and B-3 and one (1) natural gas and #2 fuel oil fired boilers stack exhaust shall be performed once per shift during normal daylight operations when burning coal or #2 fuel oil. A trained employee shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when an abnormal emission is observed.

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.1.9 Record Keeping Requirements

- (a) To document compliance with Conditions D.1.1, D.1.2 and D.1.6, the Permittee shall maintain records in accordance with (1) through (6) below. Records maintained for (1) through (6) shall be taken monthly and shall be complete and sufficient to establish compliance with the NO_x and SO₂ emission limits established in Conditions D.1.1, D.1.2 and D.1.7. Note that pursuant to 40 CFR 60 Subpart Dc, the fuel oil sulfur limit applies at all times including periods of startup, shutdown, and malfunction.
 - (1) Calendar dates covered in the compliance determination period;
 - (2) Actual fuel oil usage since last compliance determination period and equivalent sulfur dioxide emissions;
 - (3) A certification, signed by the owner or operator, that the records of the fuel supplier certifications represent all of the fuel combusted during the period, the natural gas fired boiler certification does not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34); and

If the fuel supplier certification is used to demonstrate compliance the following, as a minimum, shall be maintained:

- (4) Fuel supplier certifications;
- (5) The name of the fuel supplier; and
- (6) A statement from the fuel supplier that certifies the sulfur content of the fuel oil.

The Permittee shall retain records of all recording/monitoring data and support information for a period of five (5) years, or longer if specified elsewhere in this permit, from the date of the monitoring sample, measurement, or report. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit.

- (b) To document compliance with Condition D.1.8, the Permittee shall maintain records of visible emissions notations.
- (c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

D.1.10 Reporting Requirement

- (a) The Natural Gas Boiler Certification shall be submitted to the address listed in Section C General Reporting Requirements, using the form located at the end of this permit, or their equivalent.
- (b) A quarterly summary of the information to document compliance with Condition D.1.1 shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
Office of Air Quality
COMPLIANCE DATA SECTION

Part 70 Quarterly Report

Source Name: Madison State Hospital
Source Address: 711 Green Road, Madison, Indiana 47250
Mailing Address: 711 Green Road, Madison, Indiana 47250
Part 70 Permit No.: T077-6406-00008
Facility: Boilers B-2 and B-3
Parameter: Fuel Usage
Limit: The input of No. 2 Fuel Oil to the two (2) natural gas fired boilers, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (MMBtu) per hour of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, identified as B-2 and B-3 shall be less than 4,553,333 gallons per year.

YEAR: _____

Month	Column 1	Column 3	Column 1 + Column 3
	No. 2 Fuel Oil Usage This Month	No. 2 Fuel Oil Usage Previous 11 Months	No. 2 Fuel Oil Usage 12 Month Total
Month 1			
Month 2			
Month 3			

9 No deviation occurred in this quarter.

9 Deviation/s occurred in this quarter.
Deviation has been reported on: _____

Submitted by: _____
Title / Position: _____
Signature: _____
Date: _____
Phone: _____

Attach a signed certification to complete this report.

Mail to: Permit Administration & Development Section
Office Of Air Management
100 North Senate Avenue
P. O. Box 6015
Indianapolis, Indiana 46206-6015

Madison State Hospital
711 Green Road
Madison, Indiana 47250

Affidavit of Construction

I, _____, being duly sworn upon my oath, depose and say:
(Name of the Authorized Representative)

1. I live in _____ County, Indiana and being of sound mind and over twenty-one (21) years of age, I am competent to give this affidavit.
2. I hold the position of _____ for _____.
(Title) (Company Name)
3. By virtue of my position with _____, I have personal
(Company Name)
knowledge of the representations contained in this affidavit and am authorized to make
these representations on behalf of _____.
(Company Name)
4. I hereby certify that Madison State Hospital, 711 Green Road, Madison, Indiana 47250, completed construction of the removal of two coal fired boilers and add two new natural gas and No. 2 fuel oil fired boilers as replacements to their existing plant on _____ in conformity with the requirements and intent of the Significant Source Modification application received by the Office of Air Management on October 31, 2000 and as permitted pursuant to **SSM077-12914-00008** issued on _____.

Further Affiant said not.

I affirm under penalties of perjury that the representations contained in this affidavit are true, to the best of my information and belief.

Signature

Date

STATE OF INDIANA)
)SS

COUNTY OF _____)

Subscribed and sworn to me, a notary public in and for _____ County and State of
Indiana on this _____ day of _____, 20 _____.
My Commission expires: _____

Signature

Name (typed or printed)

Indiana Department of Environmental Management Office of Air Quality

Technical Support Document (TSD) for a Source Modification to a Part 70 Operating Permit

Source Background and Description

Source Name:	Madison State Hospital
Source Location:	711 Green Road, Madison, Indiana 47250
County:	Jefferson
SIC Code:	8063
Operation Permit No.:	T077-6406-00008
Operation Permit Issuance Date:	December 16, 1998
Source Modification No.:	SSM077-12914-00008
Permit Reviewer:	Phillip Ritz/EVP

The Office of Air Quality (OAQ) has reviewed a modification application from Madison State Hospital relating to the operation of a Psychiatric care facility.

History

On October 31, 2000, Madison State Hospital submitted an application to the OAQ requesting to remove two coal fired boilers and add two new natural gas and No. 2 fuel oil fired boilers as replacements to their existing plant. Madison State Hospital was issued a Part 70 permit (T077-12914-00008) on December 16, 1998.

New Emission Units and Pollution Control Equipment Receiving Prior Approval

The application includes information relating to the prior approval for the construction and operation of the following equipment pursuant to 326 IAC 2-7-5(16):

- (a) Two (2) natural gas fired boilers, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (MMBtu) per hour of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, identified as B-2 and B-3, each exhausting at one (1) stack, identified as S-2 and S-3, respectively.
- (b) The following equipment at the source will be decommissioned and removed once the two (2) natural gas fired boilers, using No. 2 fuel oil as backup, identified as B-2 and B-3 are constructed and fully operational:
 - (1) Two (2) sixty-six (66) mmBtu per hour coal fired boilers, identified as EU-2 and 3, exhausting to stack S-1 with one (1) cyclone for particulate control.

Existing Approvals

The source was issued a Part 70 Operating Permit (T077-12914-00008) on December 16, 1998.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (°F)
B-2	Boiler Stack	60	3	N/A	N/A
B-3	Boiler Stack	60	3	N/A	N/A

Recommendation

The staff recommends to the Commissioner that the Significant Source Modification be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on October 31, 2000.

Emission Calculations

See Appendix A of this document for detailed emissions calculations (Appendix A, pages 1 through 8.)

Potential To Emit Before Controls (Modification)

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA.”

Pollutant	Potential To Emit (tons/year)
PM	5.80
PM-10	5.80
SO ₂	201.88
VOC	2.34
CO	35.69
NO _x	69.63

HAP's	Potential To Emit (tons/year)
Formaldehyde	0.03
Selenium	0.01
TOTAL	0.03

Justification for Modification

The Title V permit is being modified through a Significant Source Modification. This modification is being performed pursuant to 326 IAC 2-7-10.5(g) as the modification has the potential to emit greater than or equal to twenty-five (25) tons per year of any of SO₂, CO and NO_x.

The interim construction permit (077-12914i-00008) and this Part 70 source modification (SSM077-12914-00008) will give the source authority to modify the source and construct the emission units listed under New Emission Units and Pollution Control Equipment Receiving Prior Approval. The source has requested preconstruction approval to be combined with operation approval and an administrative amendment (077-13680-00008) will be issued to incorporate the significant source modification into the Part 70 permit.

County Attainment Status

The source is located in Jefferson County.

Pollutant	Status
PM-10	attainment
SO ₂	attainment
NO ₂	attainment
Ozone	attainment
CO	attainment
Lead	attainment

Volatile organic compounds (VOC) and oxides of nitrogen (NO_x) are precursors for the formation of ozone. Therefore, VOC and NO_x emissions are considered when evaluating the rule applicability relating to the ozone standards. Jefferson County has been designated as attainment or unclassifiable for ozone.

Source Status

Existing Source PSD or Emission Offset Definition (emissions after controls, based upon 8760 hours of operation per year at rated capacity and/or as otherwise limited):

Pollutant	Emissions (tons/year)
PM	140.05
PM-10	140.05
SO ₂	2,516.57
VOC	1.34
CO	142.96
NO _x	195.91

Note: For the purpose of determining Title V applicability for particulates, PM-10, not PM, is the regulated pollutant in consideration.

- (a) This existing source is a major stationary source because an attainment regulated pollutant is emitted at a rate of 250 tons per year or more, and it is not one of the 28 listed source categories.

- (b) This information reflects the existing source emissions after controls, based upon 8760 hours of operation per year at rated capacity and/or as otherwise limited.

Potential to Emit After Controls for the Modification

The table below summarizes the total potential to emit, after controls, of the significant emission units for the modification.

	Potential to Emit (tons/year)						
Process/facility	PM	PM-10	SO ₂	VOC	CO	NO _x	HAPs
Proposed Natural gas / #2 fuel oil boilers B-2 and B-3	5.80	5.80	201.88	2.34	35.69	69.63	0.03/ (Formaldehyde) 0.03
Contemporaneous Increases ^(a)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Contemporaneous Decreases Average actual emissions from Coal fired boilers EU 2 & 3 ^(b)	(12.51)	(12.51)	(227.71)	(0.15)	(12.51)	(15.64)	n/a
Net Emissions Increase	(6.71)	(6.71)	(25.83)	2.19	23.18	53.99	0.03/ (Formaldehyde) 0.03
PSD Major Source Modification Thresholds	25.00	15.00	40.00	40.00	100.00	40.00	n/a

Notes:

(a) Contemporaneous increases for the past 5 years.

(b) Contemporaneous decreases for the past 5 years.

There were no other contemporaneous increases or decreases done for the past five years.

Numbers in (parentheses) represent a negative value.

Limited Potential to Emit After Controls for the Modification

The table below summarizes the total potential to emit, reflecting all limits and controls, of the significant emission units for the modification.

	Potential to Emit (tons/year)						
Process/facility	PM	PM-10	SO ₂	VOC	CO	NO _x	HAPs
Proposed Natural gas / #2 fuel oil boilers B-2 and B-3 with fuel usage limitation	4.56	4.56	158.41	2.34	35.69	54.64	0.03/ (Formaldehyde) 0.03
Contemporaneous Increases ^(a)	0.00	0.00	0.00	0.00	0.00	0.00	0
Contemporaneous Decreases Average actual emissions from Coal fired boilers EU 2 & 3 ^(b)	(12.51)	(12.51)	(227.71)	(0.15)	(12.51)	(15.64)	n/a
Net Emissions Increase	(7.95)	(7.95)	(69.30)	2.19	23.18	39.00	0.03/ (Formaldehyde) 0.03
PSD Major Source Modification Thresholds	25.00	15.00	40.00	40.00	100.00	40.00	n/a

Notes:

(a) Contemporaneous increases for the past 5 years.

(b) Contemporaneous decreases for the past 5 years.

There were no other contemporaneous increases or decreases done for the past five years.

Numbers in (parentheses) represent a negative value.

This modification to an existing major stationary source is not major because the emissions increase is less than the PSD significant levels. Therefore, pursuant to 326 IAC 2-2 and 40 CFR 52.21, the PSD requirements do not apply.

Federal Rule Applicability

- (a) The two (2) natural gas fired boilers (ID Nos. B-2 and B-3) with No. 2 fuel oil back-up, each rated at 48.5 MMBtu/hr of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil is subject to the New Source Performance Standard, 326 IAC 12, (40 CFR 60.40c, Subpart Dc—Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units). This rule requires the following:
 - (1) SO₂ emissions be limited to 0.5 pounds per MMBtu of heat input during distillate oil firing or distillate oil sulfur content be limited to 0.5 percent by weight at all times including periods of start-up, shut-down and malfunction. The boiler is in compliance with this limitation based on supporting calculations (see Appendix A for supporting calculations);
 - (2) opacity be limited to 20 percent as a 6-minute average, except for one 6-minute period per hour limited to 27 percent opacity, and except for start-up, shut-down and malfunction periods;

- (3) initial compliance testing for opacity and SO₂ when firing No. 2 distillate fuel oil;
 - (4) SO₂ emissions monitoring, unless the affected facility is subject to the SO₂ emissions standard of §60.42c(h) (1), (2), or (3); and
 - (5) record keeping and reporting as required by Subpart Dc, including quarterly reporting of fuel supplier certification information, fuel oil sulfur content by weight, and the calculated sulfur dioxide emission rate.
- (b) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14 and 40 CFR Part 63) applicable to this source.

State Rule Applicability - Entire Source

There are no new State Rules applicable on a source-wide basis due to this Significant Source Modification. All source-wide State Rules cited in Part 70 Operating Permit T077-12914-00008 on December 16, 1998, continue to apply to this source.

State Rule Applicability - Individual Facilities

326 IAC 2-2 (PSD)

The two natural gas / #2 fuel oil boilers, identified as B-2 and B-3, are not subject to 326 IAC 2-2 (Prevention of Significant Deterioration). However, the existing source is a major source. The potential to emit of SO₂ is greater than 250 tons per year, and there are no existing limits on the potential to emit of any criteria pollutant (see emission calculations, TSD App A, page 6 of 8). The source did not trigger PSD review as the existing permitted emission units (Coal Boilers EU-2, EU-3 and Oil Boiler EU-4) were constructed prior to the dates applicable for PSD review. Therefore, any modification to this source which has the potential to emit of any of the criteria pollutants greater than the major modification thresholds, would be subject to the requirements of 326 IAC 2-2.

For NO_x, the net emission increase from any modification must be limited to less than 40 tons per twelve (12) month consecutive period so that the addition of Boilers 1 and 2 is a minor modification to a major PSD source. Therefore, the allowable NO_x emissions from the modification cannot exceed 54.64 tons per twelve (12) month consecutive period (15.64 tons per year contemporaneous decrease + 39 tons per year limited emissions) for NO_x emissions.

The input of No. 2 Fuel Oil to the two (2) natural gas fired boilers, identified as B-2 and B-3, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (MMBtu) per hour of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, identified as B-2 and B-3 shall be less than 4,553,333 gallons per year. This usage limit is required to limit the two (2) natural gas fired boilers potential to emit of NO_x to less than 40 tons per 12 consecutive month period. Compliance with this limit makes 326 IAC 2-2 (Prevention of Significant Deterioration) and 40 CFR 52.21 not applicable.

After the removal of the coal fired boilers and the issuance of this significant source modification SSM077-12914-00008 the limited potential to emit for the entire source will be less than 250 tons per year for all criteria pollutants.

326 IAC 2-4.1-1 (New Source Toxics Control)

326 IAC 2-4.1-1 applies to new or reconstructed facilities with potential emissions of any single HAP equal or greater than ten (10) tons per twelve (12) month period and potential emissions of a combination of HAPs greater than or equal to twenty-five (25) tons per twelve (12) month period. Since the modification has the potential to emit any single HAP and any combination of HAPs less than 10 tons and less than 25 tons per twelve (12) month period, respectively, the requirements of 326 IAC 2-4.1-1 do not apply.

326 IAC 6-2 (Particulate Emission Limitations for Sources of Indirect Heating)

The two (2) natural gas fired boilers (ID Nos. B-2 and B-3) with No. 2 fuel oil back-up, each rated at 48.5 MMBtu/hr of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, are subject to the particulate matter limitations of 326 IAC 6-2. Pursuant to this rule, the two (2) natural gas fired boilers (ID Nos. B-2 and B-3) (constructed after September 21, 1983) are limited by the following equation from 326 IAC 6-2-4:

$$Pt = 1.09/Q^{0.26}$$

where: Pt = maximum allowable particulate matter (PM) emitted per MMBtu heat input

Q = total source max. indirect heater input = 48.5 + 48.5 + 66.0 + 66.0 + 31.0 = 260.0 MMBtu/hr

$$Pt = 1.09/(260)^{0.26} = 0.26 \text{ lbs PM/MMBtu}$$

Therefore, the two (2) boilers are limited to 0.26 lbs PM/MMBtu.

compliance calculation:

$$(5.80 \text{ tons PM/yr}) * (\text{hr}/90.4 \text{ MMBtu}) * (\text{yr}/8,760 \text{ hrs}) * (2,000 \text{ lbs/ton}) = 0.01 \text{ lbs PM/MMBtu}$$

Actual lbs PM/MMBtu (0.01) are less than allowable lbs PM/MMBtu (0.26), therefore, the two (2) natural gas fired boilers (ID Nos. B-2 and B-3) will comply with the requirements of 326 IAC 6-4.

326 IAC 7-1.1-2 (Sulfur Dioxide Emission Limitations)

The two (2) natural gas fired boilers (ID Nos. B-2 and B-3) with No. 2 fuel oil back-up, each rated at 48.5 MMBtu/hr of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil are subject to 326 IAC 7-1.1-2 (Sulfur Dioxide Emission Limitations). This rule places a sulfur dioxide emission limit of 0.5 lb/MMBtu for #2 distillate oil combustion. It has been calculated that the sulfur content of #2 fuel oil must be less than or equal to 0.49% in order to comply with this rule (see Appendix A for detailed calculations). This source will comply with this limit by using #2 fuel oil with a sulfur content of 0.49%.

Calculations to show compliance with 326 IAC 7-1.1-2 for the two (2) natural gas fired boilers B-2 and B-3:

Allowable SO₂ emissions when combusting coal =

$$46.37 \text{ mmBtu/hour} \times 0.5 \text{ lbs/mmBtu} = 23.185 \text{ lbs/hour}$$

Potential SO₂ emissions(before controls) when combusting coal =

$$100.95 \text{ tons/year} \times 2000 \text{ lbs/tons} \times \text{yr}/8760 \text{ hrs} = 23.05 \text{ lbs/hr}$$

Compliance Requirements

Permits issued under 326 IAC 2-7 are required to ensure that sources can demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a more or less continuous demonstration. When this occurs IDEM, OAQ, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-7-5. As a result, compliance requirements are divided into two sections: Compliance Determination Requirements and Compliance Monitoring Requirements.

Compliance Determination Requirements in Section D of the permit are those conditions that are found more or less directly within state and federal rules and the violation of which serves as grounds for enforcement action. If these conditions are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

The compliance monitoring requirements applicable to this source are as follows:

1. The two (2) natural gas fired boilers, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (MMBtu) per hour of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, identified as B-2 and B-3 have applicable compliance monitoring conditions as specified below:
 - (a) Visible emission notations of the two (2) natural gas fired boilers, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (MMBtu) per hour of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, identified as B-2 and B-3 and one (1) natural gas and #2 fuel oil fired boilers stack exhaust shall be performed once per shift during normal daylight operations when burning coal or #2 fuel oil. A trained employee shall record whether emissions are normal or abnormal. For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time. In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions. A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process. The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when an abnormal emission is observed.

These monitoring conditions are necessary because the boilers must operate properly to ensure compliance with 326 IAC 6-2-3 (Particulate matter (PM)) and 326 IAC 2-7 (Part 70).

Changes Proposed

The following changes have been made to the Part 70 Permit with the approval of the OAQ Air Compliance Section:

1. The expiration date has been added to the signature box.
2. A.1 (General Information) has been revised to include rule cite for is the definition of a major source in 326 IAC 2-7 and eliminate the phone number of the contact person.
- A.1 General Information [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)] **[326 IAC 2-7-1(22)]**
3. Section A.2 of the permit has been revised to list the new emission units. The changes to the permit are as follows:
 - A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c)(3)]
[326 IAC 2-7-5(15)]

This stationary source consists of the following emission units and pollution control devices:

 - (a) ~~Two (2) sixty-six (66) mmBtu per hour coal fired boilers, identified as EU-2 and 3, exhausting to stack S-1 with one (1) cyclone for particulate control~~ **Two (2) natural gas fired boilers, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (MMBtu) per hour of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, identified as B-2 and B-3, each exhausting at one (1) stack, identified as S-2 and S-3, respectively.** and
 - (b) One (1) thirty-one (31) mmBtu per hour natural gas/#2 fuel oil fired boiler, identified as EU-4, exhausting to stack S
4. Section D.1 of the permit has been revised to include the new emission units and applicable regulations. The changes are as follows:

SECTION D.1 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]:

- (a) ~~Two (2) sixty-six (66) mmBtu per hour coal fired boilers, identified as EU-2 and 3, exhausting to stack S-1 with one (1) cyclone for particulate control~~ **Two (2) natural gas fired boilers, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (MMBtu) per hour of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, identified as B-2 and B-3, each exhausting at one (1) stack, identified as S-2 and S-3, respectively, and**
- (b) one (1) thirty-one (31) mmBtu per hour natural gas/#2 fuel oil fired boiler, identified as EU-4, exhausting to stack S-2.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.1.1 PSD Minor Limit [326 IAC 2-2] [40 CFR 52.21]

The input of No. 2 Fuel Oil to the two (2) natural gas fired boilers, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (MMBtu) per hour of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, identified as B-2 and B-3 shall be less than 4,553,333 gallons per year. This usage limit is required to limit the potential to emit of NOx to less than 54.64 tons per twelve (12) month consecutive period (15.64 tons per year contemporaneous decrease + 39 tons per year limited emissions) for NOx emissions.

Compliance with this limit makes 326 IAC 2-2 (Prevention of Significant Deterioration) and 40 CFR 52.21 not applicable.

D.1.2 Sulfur dioxide (SO₂) [326 IAC 7-1.1-2] [326 IAC 12-1]

Pursuant to 326 IAC 7-1.1-2 (SO₂ Emissions Limitations) and 40 CFR 60, Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units):

- (a) the SO₂ emissions from the one (1) thirty one (31) mmBtu per hour natural gas and #2 fuel oil fired boiler, **and the two (2) natural gas fired boilers, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (MMBtu) per hour of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, identified as B-2 and B-3,** shall not exceed five tenths (0.5) pounds per mmBtu for when combusting #2 fuel oil only.
- (b) **The sulfur content of the fuel oil shall not exceed five-tenths percent (0.5%) by weight. [40 CFR 60.42c(d)]**

Pursuant to 40 CFR 60 Subpart Dc, the fuel oil sulfur content limit applies at all times, including periods of startup, shutdown, and malfunction.

D.1.3 Particulate matter (PM) [326 IAC 6-2-3(d)]

- (a) Pursuant to OP-39-01-94-0076, OP39-01-94-0077, issued on June 7, 1990, and 326 IAC 6-23(d) (Particulate emissions limitations), the Particulate Matter emissions from ~~the two (2) sixty six (66.0) mmBtu per hour coal fired boilers and the one (1) thirty one (31) mmBtu per hour natural gas and #2 fuel oil boiler,~~ shall each be limited to eight tenths (0.8) pounds per million Btu.
- (b) Pursuant to 326 IAC 6-2-3 (Particulate Matter Emission Limitations for Sources of Indirect Heating, the PM emissions from each of the two (2) natural gas fired boilers, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (MMBtu) per hour of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, identified as B-2 and B-3 shall be limited to 0.26 pounds per MMBtu heat input.

This limitation is based on the following equation:

$$Pt = \frac{C \times a \times h}{76.5 \times Q^{0.75} \times N^{0.25}}$$

where

C = 50 u/m³

Pt = emission rate limit (lbs/MMBtu)

Q = total source heat input capacity (MMBtu/hr)= 48.5 + 48.5 + 66.0 + 66.0 + 31.0 = 260.0 MMBtu/hr

N = number of stacks

a = plume rise factor (0.67)

h = stack height (ft)

D.1.4 Emission Unit Removal

The following equipment at the source will be decommissioned and removed once the two (2) natural gas fired boilers, using No. 2 fuel oil as backup, identified as B-2 and B-3 are constructed and fully operational:

- (1) **Two (2) sixty-six (66) mmBtu per hour coal fired boilers, identified as EU-2 and 3, exhausting to stack S-1 with one (1) cyclone for particulate control.**

D.1.45 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for this facility and its control device

Compliance Determination Requirements

D.1.6 Sulfur Dioxide Emissions and Sulfur Content

Pursuant to 40 CFR 60, Subpart Dc, the Permittee shall demonstrate compliance shall be determined utilizing one of the following options.

- (a) Pursuant to 326 IAC 3-7-4, the Permittee shall demonstrate that the ~~fuel oil sulfur content does~~ **sulfur dioxide emissions do** not exceed five-tenths percent ~~(0.5%)~~ **(0.5) pound per million Btu heat input** by weight by:
- (1) Providing vendor analysis of fuel delivered, if accompanied by a **vendor** certification, **or**;
- (2) Analyzing the oil sample to determine the sulfur content of the oil via the procedures in 40 CFR 60, Appendix A, Method 19.
- (A) Oil samples may be collected from the fuel tank immediately after the fuel tank is filled and before any oil is combusted; and
- (B) If a partially empty fuel tank is refilled, a new sample and analysis would be required upon filling; or
- (b) Compliance may also be determined by conducting a stack test for sulfur dioxide emissions from the thirty-one (31) MMBtu per hour boiler **and the two (2) natural gas fired boilers, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (MMBtu) per hour of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, identified as B-2 and B-3**, using 40 CFR 60, Appendix A, Method 6 in accordance with the procedures in 326 IAC 3-6.

A determination of noncompliance pursuant to ~~either~~ **any** of the methods specified in (a) or (b) above shall not be refuted by evidence of compliance pursuant to the other method.

D.1.7 NOx Emissions

Compliance with Condition D.1.1 shall be demonstrated within 30 days of the end of each month based on the total No. 2 fuel oil usage for the twelve (12) month period.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

D.1.98 Visible Emissions Notations

- (a) ~~Daily~~ **Visible** emission notations of the ~~two (2) coal~~ **two (2) natural gas fired boilers, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (MMBtu) per hour of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, identified as B-2 and B-3** and one (1) natural gas and #2 fuel oil fired boilers stack exhaust shall be performed **once per shift** during normal daylight operations when burning coal or #2 fuel oil. A trained employee shall record whether emissions are normal or abnormal.

- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when an abnormal emission is observed.

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.1.409 Record Keeping Requirements

- (a) To document compliance with Conditions **D.1.1**, D.1.2 and D.1.6, the Permittee shall maintain records in accordance with (1) through (6) below. **Records maintained for (1) through (6) shall be taken monthly and shall be complete and sufficient to establish compliance with the NOx and SO2 emission limits established in Conditions D.1.1, D.1.2 and D.1.7. Note that pursuant to 40 CFR 60 Subpart Dc, the fuel oil sulfur limit applies at all times including periods of startup, shutdown, and malfunction.**
 - (1) Calendar dates covered in the compliance determination period;
 - (2) Actual fuel oil usage since last compliance determination period and equivalent sulfur dioxide emissions;
 - (3) A certification, signed by the owner or operator, that the records of the fuel supplier certifications represent all of the fuel combusted during the period, **the natural gas fired boiler certification does not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34);** and

If the fuel supplier certification is used to demonstrate compliance the following, as a minimum, shall be maintained:

- (4) Fuel supplier certifications;
- (5) The name of the fuel supplier; and
- (6) A statement from the fuel supplier that certifies the sulfur content of the fuel oil.

The Permittee shall retain records of all recording/monitoring data and support information for a period of five (5) years, or longer if specified elsewhere in this permit, from the date of the monitoring sample, measurement, or report. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit.

- (b) To document compliance with Conditions D.1.8 and ~~D.1.9~~, the Permittee shall maintain records of visible emissions notations **once per shift**.

- (c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

D.1.1110 Reporting Requirement

- (a) The Natural Gas Boiler Certification shall be submitted to the address listed in Section C General Reporting Requirements, using the form located at the end of this permit, or their equivalent.
- (b) A quarterly summary of the information to document compliance with Condition D.1.1 shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).
5. A quarterly report for No.2 fuel oil usage in Boilers B-2 and B-3 has been added to page 33a of the permit. The new report reads as follows:

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
Office of Air Quality
COMPLIANCE DATA SECTION

Part 70 Quarterly Report

Source Name: Madison State Hospital
Source Address: 711 Green Road, Madison, Indiana 47250
Mailing Address: 711 Green Road, Madison, Indiana 47250
Part 70 Permit No.: T077-6406-00008
Facility: Boilers B-2 and B-3
Parameter: Fuel Usage

Limit: The input of No. 2 Fuel Oil to the two (2) natural gas fired boilers, using No. 2 fuel oil as backup, each rated at 48.5 million British thermal units (MMBtu) per hour of natural gas or 46.37 MMBtu/hr of No. 2 fuel oil, identified as B-2 and B-3 shall be less than 4,553,333 gallons per year.

YEAR: _____

Month	Column 1	Column 3	Column 1 + Column 3
	No. 2 Fuel Oil Usage This Month	No. 2 Fuel Oil Usage Previous 11 Months	No. 2 Fuel Oil Usage 12 Month Total
Month 1			

Month 2			
Month 3			

9 **No deviation occurred in this quarter.**

9 **Deviation/s occurred in this quarter.**
Deviation has been reported on: _____

Submitted by: _____

Title / Position: _____

Signature: _____

Date: _____

Phone: _____

Attach a signed certification to complete this report.

Conclusion

The operation of the removal of two coal fired boilers and addition of two new natural gas and No. 2 fuel oil fired boilers as replacements to their existing plant shall be subject to the conditions of the attached proposed **Significant Source Modification No. SSM077-6406-00008.**

Appendix A: Emission Calculations

Company Name: Madison State Hospital
Address, City IN Zip: 711 Green Road, Madison, Indiana 47250
SSM: SSM077-12914-00008
Reviewer: Phillip Ritz/EVP
Date: October 31, 2000

Total Potential To Emit (tons/year)			
Emissions Generating Activity			
Pollutant	Boilers 1, 2 (Natural Gas)	Boilers 1, 2 (No.2 Fuel Oil)	Boiler 1 and 2 (worst case natural gas and No. 2 fuel oil)
PM	0.81	5.80	5.80
PM10	3.23	5.80	5.80
SO2	0.25	201.88	201.88
NOx	21.24	69.63	69.63
VOC	2.34	0.58	2.34
CO	35.69	14.51	35.69
total HAPs	0.03	0.01	0.03
worst case single HAP	(Formaldehyde) 0.03	(Selenium) 0.01	(Formaldehyde) 0.03
Total emissions based on rated capacities at 8,760 hours/year.			
**For the purposes of determining Title V applicability, PM10 (not PM) is the regulated pollutant in consideration			
Controlled Potential To Emit (tons/year)			
Emissions Generating Activity			
Pollutant	Boilers 1, 2 (Natural Gas)	Boilers 1, 2 (No.2 Fuel Oil)	Boiler 1 and 2 (worst case natural gas and No. 2 fuel oil)
PM	0.81	4.56	4.56
PM10	3.23	4.56	4.56
SO2	0.25	158.41	158.41
NOx	21.24	54.64	54.64
VOC	2.34	0.46	2.34
CO	35.69	11.38	35.69
total HAPs	0.03	0.00	0.03
worst case single HAP	(Formaldehyde) 0.03	0.00	(Formaldehyde) 0.03
Total emissions based on rated capacities at 8,760 hours/year.			
**For the purposes of determining Title V applicability, PM10 (not PM) is the regulated pollutant in consideration			

Appendix A: Emissions Calculations**Natural Gas Combustion Only****MM BTU/HR <100****Small Industrial Boiler****Company Name:** Madison State Hospital**Address, City IN Zip:** 711 Green Road, Madison, Indiana 47250**SSM:** SSM077-12914-00008**Reviewer:** Phillip Ritz/EVP**Date:** October 31, 2000Heat Input Capacity
MMBtu/hrPotential Throughput
MMCF/yr

97.0

849.7

Emission Factor in lb/MMCF	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
	1.9	7.6	0.6	50.0	5.5	84.0
Potential Emission in tons/yr	0.81	3.23	0.25	**see below	2.34	35.69

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.

**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

See page 2 for HAPs emissions calculations.

Appendix A: Emissions Calculations
Natural Gas Combustion Only

Page 3 of 8 TSD App A

MM BTU/HR <100

Small Industrial Boiler

HAPs Emissions

Company Name: Madison State Hospital

Address, City IN Zip: 711 Green Road, Madison, Indiana 47250

SSM: SSM077-12914-00008

Reviewer: Phillip Ritz/EVP

Date: October 31, 2000

HAPs - Organics

Emission Factor in lb/MMcf	Benzene 2.1E-03	Dichlorobenzene 1.2E-03	Formaldehyde 7.5E-02	Hexane 1.8E+00	Toluene 3.4E-03
Potential Emission in tons/yr	0.00	0.00	0.03	0.76	0.00

HAPs - Metals

Emission Factor in lb/MMcf	Lead 5.0E-04	Cadmium 1.1E-03	Chromium 1.4E-03	Manganese 3.8E-04	Nickel 2.1E-03
Potential Emission in tons/yr	0.00	0.00	0.00	0.00	0.00

Methodology is the same as page 1.

The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

**Appendix A: Emissions Calculations
Industrial Boilers (> 100 mmBtu/hr)
#1 and #2 Fuel Oil**

Page 4 of 8 TSD App A

Company Name: Madison State Hospital
Address, City IN Zip: 711 Green Road, Madison, Indiana 47250
SSM: SSM077-12914-00008
Reviewer: Phillip Ritz/EVP
Date: October 31, 2000

Heat Input Capacity MMBtu/hr	Potential Throughput kgals/year	S = Weight % Sulfur 0.49	No. 2 Fuel Usage Limitation 21.53%
92.74	5802.87429		No.2 Fuel Oil Limitation (gal) 4,553,333.33

	Pollutant				
	PM*	SO2	NOx	VOC	CO
Emission Factor in lb/kgal	2.0	69.58 (142.0S)	24.0	0.20	5.0
Potential Emission in tons/yr	5.80	201.88	69.63	0.58	14.51
Limited Emissions in tons/yr	4.55	158.41	54.64	0.46	11.38

Methodology

1 gallon of No. 2 Fuel Oil has a heating value of 140,000 Btu

Potential Throughput (kgals/year) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1kgal per 1000 gallon x 1 gal per 0.140 MM Btu

Emission Factors are from AP 42, Tables 1.3-1, 1.3-2, and 1.3-3 (SCC 1-02-005-01/02/03) Supplement E 9/98

*PM emission factor is filterable PM only. Condensable PM emission factor is 1.3 lb/kgal.

Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

Emission (tons/yr) = Throughput (kgals/ yr) x Emission Factor (lb/kgal)/2,000 lb/ton

Appendix A: Emissions Calculations
Industrial Boilers (> 100 mmBtu/hr)
#1 and #2 Fuel Oil
HAPs Emissions

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Company Name: Madison State Hospital
Address, City IN Zip: 711 Green Road, Madison, Indiana 47250
SSM: SSM077-12914-00008
Reviewer: Phillip Ritz/EVP
Date: October 31, 2000

HAPs - Metals

Emission Factor in lb/mmBtu	Arsenic 4.0E-06	Beryllium 3.0E-06	Cadmium 3.0E-06	Chromium 3.0E-06	Lead 9.0E-06
Potential Emission in tons/yr	0.00	0.00	0.00	0.00	0.00
Limited Emissions in tons/yr	0.00	0.00	0.00	0.00	0.00

HAPs - Metals (continued)

Emission Factor in lb/mmBtu	Mercury 3.0E-06	Manganese 6.0E-06	Nickel 3.0E-06	Selenium 1.5E-05
Potential Emission in tons/yr	0.00	0.00	0.00	0.01
Limited Emissions in tons/yr	0.00	0.00	0.00	0.00

Methodology

No data was available in AP-42 for organic HAPs.

Potential Emissions (tons/year) = Throughput (mmBtu/hr)*Emission Factor (lb/mmBtu)*8,760 hrs/yr / 2,000 lb/ton

Appendix A: Emission Calculations

Company Name: Madison State Hospital
Address, City IN Zip: 711 Green Road, Madison, Indiana 47250
SSM: SSM077-12914-00008
Reviewer: Phillip Ritz/EVP
Date: October 31, 2000

Existing Source Total Potential To Emit (tons/year)			
Emissions Generating Activity			
Pollutant	Coal Boilers EU-2, EU-3	Oil Boiler EU-4	Existing Source TOTAL
PM	138.11	1.94	140.05
PM10	138.11	1.94	140.05
SO2	2,449.09	67.48	2,516.57
NOx	172.63	23.28	195.91
VOC	1.15	0.19	1.34
CO	138.11	4.85	142.96
total HAPs	0.00	0.00	0.00
worst case single HAP	0.00	0.00	0.00
Total emissions based on rated capacities at 8,760 hours/year.			
**For the purposes of determining Title V applicability, PM10 (not PM) is the regulated pollutant in consideration			
Limited Potential to Emit after Modification Issuance			
Emissions Generating Activity			
Pollutant	Oil Boiler EU-4	Boiler 1 and 2 (worst case natural gas and No. 2 fuel oil)	Limited Potential To Emit after Modification
PM	1.94	4.56	6.50
PM10	1.94	4.56	6.50
SO2	67.48	158.41	225.89
NOx	23.28	54.64	77.92
VOC	0.19	2.34	2.53
CO	4.85	35.69	40.54
total HAPs	0.00	0.03	0.03
worst case single HAP	0.00	(Formaldehyde) 0.03	(Formaldehyde) 0.03
Total emissions based on rated capacities at 8,760 hours/year.			
**For the purposes of determining Title V applicability, PM10 (not PM) is the regulated pollutant in consideration			

Appendix A: Emissions Calculations
Industrial Boilers (> 100 mmBtu/hr)
#1 and #2 Fuel Oil

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Company Name: Madison State Hospital
Address, City IN Zip: 711 Green Road, Madison, Indiana 47250
SSM: SSM077-12914-00008
Reviewer: Phillip Ritz/EVP
Date: October 31, 2000

Heat Input Capacity MMBtu/hr	Potential Throughput kgals/year	S = Weight % Sulfur 0.49	No. 2 Fuel Usage Limitation -134.74%
31	1939.71429		No.2 Fuel Oil Limitation (gal) 4,553,333.33

Emission Factor in lb/kgal	Pollutant				
	PM*	SO2	NOx	VOC	CO
	2.0	69.58 (142.0S)	24.0	0.20	5.0
Potential Emission in tons/yr	1.94	67.48	23.28	0.19	4.85

Methodology

1 gallon of No. 2 Fuel Oil has a heating value of 140,000 Btu

Potential Throughput (kgals/year) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1kgal per 1000 gallon x 1 gal per 0.140 MM Btu

Emission Factors are from AP 42, Tables 1.3-1, 1.3-2, and 1.3-3 (SCC 1-02-005-01/02/03) Supplement E 9/98

*PM emission factor is filterable PM only. Condensable PM emission factor is 1.3 lb/kgal.

Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

Emission (tons/yr) = Throughput (kgals/ yr) x Emission Factor (lb/kgal)/2,000 lb/ton

Appendix A: Emissions Calculations
Coal combustion: Chain grate stokers

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Company Name: Madison State Hospital
Address, City IN Zip: 711 Green Road, Madison, Indiana 47250
SSM: SSM077-12914-00008
Reviewer: Phillip Ritz/EVP
Date: October 31, 2000

Heat Input Capacity MMBtu/hr	Heat Content of Coal Btu/lb of Coal	Potential Throughput tons/year	Weight % Sulfur in Fuel
132	12,559	46,036	S = 2.8 %

		Pollutant				
Emission Factor in lb/ton	PM* 6.0	PM10* 6.00	SO2 106.4 (38S)	NOx 7.5	VOC 0.05	CO 6.00
Potential Emission in tons/yr	138.11	138.11	2449.09	172.63	1.15	138.11
Potential Emission <u>in lbs/MMBtu</u>	0.24		4.24			

Methodology

*The PM emission factor is filterable PM only. The PM10 emission factor is filterable and condensable PM10 combined.

VOC emission factor is from Table 1.1-19 (Total non-methane organic carbon).

Potential Throughput (tons/year) = Heat Input Capacity (MMBtu/hr) x 10⁶ Btu/MMBtu / Heat Content of Coal (Btu/lb) / 2000 lb/ton x 8,760 hr

Emission Factors from AP-42, Chapter 1.1 for industrial overfeed stoker SCC 1-02-002-05/25 (Supplement E, 9/98)

Additional emission factors for commercial/institutional and electric generation boilers are available in AP-42, Chapter 1.1.

HAPs emission factors are available in AP-42, Chapter 1.1.

Emission (tons/yr) = Throughput tons per year x Emission Factor (lb/ton) / 2,000 lb/ton

Emissions (lbs/MMBtu) = 10⁶ Btu/MMBtu / Heat Content of Coal (Btu/lb) / 2000 lb/ton x Emission Factor (lb/ton)

Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).